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EXAMINER
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ART UNIT	PAPER NUMBER
2143	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/658,705	LEE, HORNG-JUING
	Examiner	Art Unit	
	Jerry B Dennison	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 September 2000* .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-77* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-77* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 September 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

   If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
         application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

   a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)   4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3* .   6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1.   The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2.   Claims 2, 30, 39, 42, and 69 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3.   Claim 2 recites the limitation "passage of time" in Line 14. It is not clear what is meant by this limitation. Appropriate corrections are required.

4.   Claim 30 recites the limitation "passage of time" in Lines 12-13. It is not clear what is meant by this limitation. Appropriate corrections are required.

5.   Claim 39 recites the limitation "passage of time" in Line 5. It is not clear what is

meant by this limitation. Appropriate corrections are required.

6.   Claim 42 recites the limitation "passage of time" in Line 23. It is not clear what is

meant by this limitation. Appropriate corrections are required.

7.   Claim 69 recites the limitation "passage of time" in Line 20. It is not clear what is

meant by this limitation. Appropriate corrections are required.

Claim Rejections - 35 USC § 102

8.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed
> publication in this or a foreign country, before the invention thereof by the applicant for a patent.

9.   Claim 1, 3, 4, 10, 24-26, 29, 31, 32, 38, 40, 41, 43, 44, 50, 64-66, 70, 71, and 74-

76 are rejected under 35 U.S.C. 102(a) as being anticipated by Tanaka et al. (U.S.

5,610,841).

10.   Regarding claim 1, Tanaka discloses of a video server for transmitting a plurality

of media data titles to one or more client(s) from a central server and a proxy server,

wherein each title is divided into blocks to be transmitted to the one or more client(s) in

a time sequence, and each block is divided into sub-blocks, comprising:

identifying which sub-blocks from different blocks of each title that are to be

cached, wherein the identified sub-blocks include ones that are distributed over the

blocks of at least one title (col. 4, lines 5-25, Tanaka teaches a frame block division unit

for dividing video from a transmission stand-by buffer into a set of equally sized sub-

blocks); and

caching the identified sub-blocks under the control of the proxy server to reduce

the transmission bit rate of the central sever for transmitting the titles (col. 2, lines 5-40,

Tanaka teaches a video server controlling frame block servers which cache the sub-

blocks for transmission to subscribers, reducing the transmission bit rate of the video

server).

11.   Regarding claim 3, Tanaka discloses the invention substantially as claimed, as

described in claim 1, including wherein the caching caches substantially the same

number of sub-blocks for each block of said at least one title (col. 4, lines 58-61, Tanaka

teaches of video sections being of the same size, col. 4 line 5-10, Tanaka teaches that

the sub-blocks are of equal size).

12.   Regarding claim 4, Tanaka discloses the invention substantially as claimed, as

described in claim 1, including wherein the media titles include video titles, and the

sub-blocks include video frames, and each block is divided into video frames that are to

be transmitted sequentially (col. 4, lines 5-25), and further comprising inserting the

cached video frames into a stream of video frames from the central server to form a

combined stream and sending the combined stream to the client(s) (col. 4, lines 5-25,

Tanaka teaches that the sub-blocks are transmitted sequentially, enabling real-time

video transmission).

13.   Regarding claim 10, Tanaka discloses the invention substantially as claimed, as

described in claim 1, including wherein prior to any accesses of the titles by the

client(s), an average caching approach utilizes storage at the proxy server by storing a

substantially equal number of sub-blocks from each title (col. 4, lines 58-61, Tanaka

teaches of video sections being of the same size, col. 4 line 5-10, Tanaka teaches that

the sub-blocks are of equal size).

14.   Regarding claim 24, Tanaka discloses defining a parameter N to specify caching

units; and each time a caching action is activated, performing said action on one or

        more $1/N$ portions of said data title (where $N \geq 1$), wherein said $1/N$ portion of

said   data title is distributed in said data title (col. 4, lines 5-25 and col.24, lines 25-60,

Tanaka teaches of caching sub-blocks which make up frame blocks, each frame block

being a section of video data).

15.   Regarding claim 25, Tanaka discloses the invention substantially as claimed in

claim 24, including wherein said *1/N* portion of said data title is evenly distributed by:

dividing said data title into a number of blocks (col. 2, lines 20-25);

dividing each block into a number of sub-blocks (col. 4, lines 5-15); and

for each caching action, selecting the same number of sub-blocks from each

block of at least one title (col. 4, lines 5-15 and col. 24, lines 25-60).

16.   Regarding claim 26, Tanaka discloses the invention substantially as claimed in

claim 24, including wherein said caching action comprises adding data to a cached

portion of said title (col. 24, lines 29-30 and 50-55, Tanaka teaches of adding data of a

media title to a cache).

17.   Regarding claim 29, Tanaka discloses a system for delivering media information;

the system comprising: a plurality of proxy servers, each servicing a number of terminal

devices and receiving a request from one of said terminal devices when a user of said

one of said terminal devices desires a media title from a plurality of media titles (col. 2,

lines 10-40); wherein at least one of said proxy servers comprises a cache memory

storing a number of units of at least one of said titles (col. 24, lines 28-29 and 50-54);

wherein the units of the at least one title stored are distributed over such title (col. 2,

lines 10-40); and a central server coupled to said proxy servers; said central server

having a storage space for storing a plurality of said titles and providing data from one

of said titles when receiving a proxy request from one of said proxy servers (col. 2, lines

8-40).

18.   Regarding claim 31, Tanaka teaches all of the features of claim 29, including wherein the at least one title is divided into blocks to be transmitted to the one or more user(s) in a time sequence, and each block is divided into sub-blocks (col. 4, lines 5-25), wherein the at least one proxy server caches the same number of sub-blocks from each block of said at least one title (col. 24, lines 28-29 and 50-54).

19.   Regarding claim 32, Tanaka teaches all of the features of claim 29, including wherein the at least one title includes a video divided into blocks to be transmitted in a time sequence, and each block is divided into sub-blocks, and the sub-blocks comprise partial information of videoframes, wherein the video frames are to be transmitted sequentially (col. 4, lines 5-25).

20.   The limitations of claim 38 are covered in the rejection of claim 29. Therefore claim 38 is rejected by the same reference used in claim 29.

21.   Claim 40 recites the same limitations as claim 3. Therefore claim 40 is rejected by the same references as claim 3.

22.   Claim 41 recites the same limitations as claim 1. Therefore claim 41 is rejected by the same references as claim 1.

23.   The limitations of claims 43 and 44 are covered by the rejections of claims 3 and

4. Therefore claims 43 and 44 are rejected by the same references used for the

rejections of claims 3 and 4.

24.   The limitations of Claim 50 are covered by the limitations of claim 10. Therefore

claim 50 is rejected by the references of claim 10.

25.   The limitations of claims 64-66 are covered by the rejections of claims 24-26.

Therefore claims 64-66 rejected by the same references used for the rejections of

claims 24-26.

26.   Claim 70 recites the same limitations as claim 3. Therefore claim 70 is rejected by

the same references as claim 3.

27.   The limitations of claim 71 are covered in the rejection of claim 4. Therefore

claim 71 is rejected by the same reference used in claim 4.

28.   The limitations of claims 74-76 are covered by the rejections of claims 24-26 and

68. Therefore claims 74-76 rejected by the same references used for the rejections of

claims 24-26 and 68.

Claim Rejections - 35 USC § 103

29.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

30.   Claim 2, 9, 11, 12, 17-19, 30, 37, 39, 42, 49, 51, 52, 57-59, 69, and 73 are

rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka and Ong (U.S.

5,815,662).

31.   As to claim 2, Tanaka discloses the invention substantially as claimed, as

described in claim 1, but Tanaka does not disclose wherein the cached sub-blocks are

cached for time periods that are independent of passage of time.

In an analogous art, Ong discloses of cached data blocks being checked around

a predetermined time interval where the data block remains in memory. Ong also

teaches that the cached data blocks are removed (oldest first) if the allocated sections

of the memory buffer are full (col.2, lines 30-67).

One in the ordinary skill at the time the invention was made would have

considered combining Tanaka's video server with the system of Ong to keep current

blocks of data in the cache until priority takes over, removing the oldest-in-time data

block from the allocated memory, benefiting the performance of the caching system by

minimizing unnecessary repetitive accesses to data storage devices and managing

peak-use data loadings by efficient data scheduling by server, reducing the bandwidth of the server.

32.   Regarding claim 9, Tanaka teaches all of the features of claim 1. However, he fails to teach wherein the identifying is made as a function of an access profile of the titles at the proxy.

In an analogous art, Ong teaches data blocks from data storage being retained in server memory buffer based on clients requests, or access profiles (col. 3, lines 1-15).

Therefore, it would have been obvious to one in the ordinary skill in the art at the time the invention was made to combine the video server of Tanaka with the predictive memory caching system of Ong for the benefits of minimizing unnecessary repetitive accesses to data storage devices and managing peak-use data loadings by efficient data scheduling by the network server (col. 2, lines 23-27).

33.   Regarding claim 11, Tanaka teaches all of the features of claim 1. However, he fails to teach wherein prior to any accesses of the titles by the client(s), a proportional caching approach utilizes access history data to determine how much of each title to cache. In an analogous art, Ong teaches that parallel streaming data processes can use request history to determine what to cache (col. 3, lines 15-25).

34.   Regarding claim 12, Tanaka teaches all of the features of claim 1. However, he fails to teach wherein after the system starts operation, cache content at the proxy

server will change from time to time to reflect actual access behavior. In an analogous art, Ong teaches of cache content being removed to free up space (col. 2, lines 60-67).

35.   Regarding claim 17, Tanaka teaches all of the features of claim 1. However, he fails to teach further comprising replacing a cached portion of a particular title by deleting the most recently cached portion of such title. In an analogous art, Ong teaches releasing the memory buffer based on priority level. It would have been obvious to one skilled in the art that the most recently cached portion of a particular title could have the lowest priority given that all groups requesting that portion have received it.

36.   Regarding claim 18, Tanaka teaches all of the features of claim 1. However, he fails to teach further comprising deciding which titles shall be subject to caching replacement using a most current access profile as an indication of a future profile. In an analogous art, Ong teaches data blocks from data storage being retained in server memory buffer based on clients requests, or access profiles (col. 3, lines 1-15).

37.   Regarding claim 19 Tanaka teaches all of the features of claim 1. However, he fails to teach further comprising keeping track of each access request at the proxy server in order to determine which titles shall be subject to caching replacement. In an analogous art, Ong teaches that parallel streaming data processes can use request history for timing of release (col. 3, lines 15-25).

38. Claim 30 is covered by the limitations of claim 2. Therefore claim 30 is rejected by the references used in the rejection of claim 2.

39. Regarding claim 37, Tanaka teaches all of the features of claim 29. However he fails to teach where the number of units is a function of an access profile of the at least one title at the at least one proxy server. In an analogous art, Ong teaches data blocks from data storage being retained in server memory buffer based on clients requests, or access profiles (col. 3, lines 1-15).

40. Claim 39 is covered by the limitations of claim 2. Therefore claim 39 is rejected by the references used in the rejection of claim 2.

41. The limitations of claim 42 are covered by the rejections of claims 2. Therefore claim 42 is rejected by the references used for the rejections of claim 2.

42. The limitations of Claim 49 are covered by the limitations of claim 9. Therefore claim 49 is rejected by the references of claim 9.

43. The limitations of claims 51 and 52 are covered by the rejections of claims 11 and 12. Therefore claims 51 and 52 are rejected by the same references used for the rejections of claims 11 and 12.

44.   The limitations of claims 57-59 are covered by the rejections of claims 17-19.

Therefore claims 57-59 are rejected by the same references used for the rejections of

claims 17-19.

45.   The limitations of Claim 69 are covered by the limitations of claim 2. Therefore

claim 69 is rejected by the references of claim 2.

46.   The limitations of claim 73 are covered in the rejection of claim 9. Therefore

claim 73 is rejected by the same reference used in claim 9.

47.   Claims 5, 6, 7, 33, 34, 35, 45, 46, and 47 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Tanaka and MacInnis et al. (U.S. 6,570,579).

48.   Regarding claim 5, Tanaka teaches all of the features of claim 1, including

wherein the media titles include video titles, and the sub-blocks comprise partial

information of video frames (col. 4, lines 5-10), wherein the video frames are to be

transmitted sequentially (col. 4, lines 15-22).

         However, Tanaka does not teach further comprising combining the partial

information of video frames from the proxy server with complementary partial

information of such video frames from the central server into complete video frames and

sending the complete video frames to the client(s).

In an analogous art, MacInnis discloses a graphics display system where video input 14 is provided by one source and graphics memory 28 is provided by another source (see Figure 1). An encoder combines the two inputs into a suitable display format (col. 7, lines 5-15).

Therefore, it would have been obvious to one in the ordinary skill in the art at the time the invention was made to combine Tanaka's video server with MacInnis' graphics display system to generate a video feed, containing video and graphics, for the benefit of sending video and graphics data in real time when a plurality of requests are received at a time.

49.   Regarding claim 6, Tanaka teaches all of the features of claim 1. However, Tanaka does not teach wherein the partial information comprise video information along some scan lines of video frames, further comprising combining the video information along such scan lines with complementary video information along other scan lines of such video frames from the central server into complete video frames and sending the complete video frames to the client(s).

In a related art, MacInnis discloses a video pipeline which supports up to one scaled video window per scan line (col.9, lines 55-65) combined with graphics windows on each scan line (col. 6 lines 50-60). An encoder combines the two inputs into a suitable display format (col. 7, lines 5-15).

50.   Regarding claim 7, Tanaka discloses all of the features of claim 5, except wherein the partial information comprise video information obtained at a set of sampling times and at a first sampling rate lower than that of a video source from which said information originates, further comprising combining the video information at the lower first sampling rate from the proxy server with complementary video information taken at sampling times different from the set of sampling times of such video frames from the central server into video data at a sampling rate higher than the First sampling rate and sending the video data at the higher sampling rate to the client(s).

In an analogous art, MacInnis discloses a graphics display system where video input 14 is provided by one source and graphics memory 28 is provided by another source (see Figure 1). The system includes a video decoder having a sample rate converter that converts the samples to the frequency of the video signal (col. 2, lines 45-60). An encoder combines the two inputs into a suitable display format (col. 7, lines 5-15).

51.   Regarding claims 33 and 34, Tanaka teaches all of the features of claim 32. However, he does not teach wherein the at least one proxy server combines the partial information of video frames with complementary partial information of such video frames from the central server into complete video frames and sends the complete video frames to user(s). He also does not teach wherein the partial information comprise video information along some scan lines of video frames, and wherein the at least

one proxy server combines the video information along such scan lines with complementary video information along other scan lines of such video frames from the central server into complete video frames and sends the complete video frames to the user(s).

In an analogous art, MacInnis discloses a graphics display system where video input 14 is provided by one source and graphics memory 28 is provided by another source (see Figure 1). An encoder combines the two inputs into a suitable display format (col. 7, lines 5-15).

Therefore, it would have been obvious to one in the ordinary skill in the art at the time the invention was made to combine Tanaka's video server with MacInnis' graphics display system to generate a video feed, containing video and graphics, for the benefit of sending video and graphics data in real time when a plurality of requests are received at a time.

52.   The limitations of claim 37 are covered in the rejection of claim 7. Therefore claim 37 is rejected by the same references used in claim 7.

53.   The limitations of claims 45 and 46 are covered by the rejections of claims 5 and 6. Therefore claims 45 and 46 are rejected by the same references used for the rejections of claims 5 and 6.

54.   The limitations of claim 47 are covered in the rejection of claim 7. Therefore

claim 47 is rejected by the same references used in claim 7.

55.   Claims 8, 36, 48, and 72 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Tanaka, MacInnis, and Valmiki et al. (U.S. 6,636,222).

56.   Regarding claim 8, Tanaka and MacInnis teach all of the features of claim 5,

except wherein the partial information comprise video information in a basic layer and

the complementary partial information comprises video information in an enhancement

layer, said basic and enhancement layers being defined according to spatial,

signal-to-noise or temporal scalability.

        Valmiki discloses of a Video and Graphics system that processes data using

windows that may overlap or cover one another with arbitrary spatial relationships (col.

6, lines 20-31).

        Therefore, it would have been obvious to one in the ordinary skill in the art at the

time the invention was made to incorporate the graphics system of Valmiki into Tanaka

for the benefit of overcoming the difficulty of decoding video data that has been

compressed within an allotted number of clock cycles (col. 1, lines 40-60).

57.   The limitations of claim 36 are covered in the rejection of claim 8. Therefore

claim 36 is rejected by the same references used in claim 8.

58.   The limitations of Claim 48 are covered by the limitations of claim 8. Therefore

claim 48 is rejected by the references of claim 8.

59.   The limitations of claim 72 are covered in the rejection of claim 8. Therefore

claim 72 is rejected by the same reference used in claim 8.

60.   Claim 13-16 and 53-56 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Tanaka and Greenwood et al. (U.S. 5,568,181).

61.   Regarding claim 13, Tanaka teaches all of the features of claim 1. However, he

fails to teach further comprising beginning a caching process at the proxy server after

receiving a title request from a client by ensuring there is sufficient bandwidth from said

proxy to such client to deliver the request and if not, denying the request.

In an analogous art, Greenwood teaches returning a rejection of the request if

sufficient bandwidth is not available (col. 5, lines 17-28).

Therefore, it would have been obvious to one in the ordinary skill in the art at the

time the invention was made to combine the video server of Tanaka with the distribution

system of Greenwood to make video distribution to users both economically and

technically practical. The benefit of combining the distribution system of Greenwood

with the video system of Tanaka is to lesson the difficulty in scheduling viewing and

managing the local distribution of video data.

62.   Regarding claim 14, Tanaka and Greenwood teach all of the features of claim 13,

including further comprising delivering the complete content of the requested title when

such content is in local storage of said proxy server. (Greenwood, col. 1, lines 34-60,

Greenwood teaches distribution of video files stored at remote video libraries).

63.   Regarding claim 15, Tanaka and Greenwood teach all of the features of claim 13,

including further comprising when said proxy server does not have complete content of

the requested title, determining if there is sufficient available backbone bandwidth to

carry said title from the central server to said proxy server and if not, rejecting the

request. (see Figure 1 and col. 3., lines 5-30, and col. 5, lines 15-30, Greenwood

teaches of video libraries providing video files through the local server to the cache if

there is sufficient bandwidth).

64.   Regarding claim 16, Tanaka and Greenwood teach all of the features of claim 13,

including further comprising activating a progressive caching process to adjust cache

content at said proxy server to reflect the requested title (Greenwood, col. 4, lines 17-

35, Greenwood teaches that the cache content is adjusted if the requested file is not in

the cache).

65.   The limitations of claims 53-56 are covered by the rejections of claims 13-16.

Therefore claims 53-56 rejected by the same references used for the rejections of

claims 13-16.

66.   Claims 20-22, 28 and 60-62 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Tanaka and Cherkasova et al. (U.S. 6,425,057).

67.   Regarding claim 20, Tanaka teaches all of the features of claim 1. However, he

does not disclose further comprising deciding which titles shall be subject to caching

replacement using a current access profile as an indication of the future profile, wherein

said deciding include:

defining a time window ending at the time of the caching replacement;

calculating an access frequency of each title in a storage of the proxy server, said

access frequency being a function of the accesses to such title during the time window

or a portion thereof; and

performing the caching replacement in response to the access frequencies of the

titles in the storage.

In an analogous art, Cherkasova discloses of a method and system for caching

objects and replacing cached objects based on frequency of requests and time (col. 4,

lines 45-53).

Therefore it would have been obvious to one in the ordinary skill in the art at the

time the invention was made to combine the video server of Tanaka with the caching

method of Cherkasova to have a method for systematically caching objects and

replacing cached objects such that popular media titles are stored in cache and

previous media titles are readily replaced. This would benefit users by providing a

better cache management of the system for providing popular, on-demand media titles.

68.   Regarding claim 21, Tanaka and Cherkasova teach all of the features of claim 20,

including, wherein said access frequency is proportional to the sum of the accesses to

such title during the time window or a portion thereof (Cherkasova, col. 4, lines 45-54,

Cherkasova teaches the use of frequency of requests for the object).

69.   Regarding claim 22, Tanaka and Cherkasova teach all of the features of claim 20,

including wherein said access frequency is proportional to a time-weighted sum of the

accesses to such title during the time window or a portion thereof, with the time

weighting in favor of accesses occurring more recently in the window (Cherkasova, col.

8, lines 5-25, Cherkasova teaches in a time-dependent implementation, the assignment

of a weighting factor may be made dependent on request times).

70.   Regarding claim 28, Tanaka discloses a system for delivering media information;

the system comprising a plurality of proxy servers, each servicing a number of terminal

devices and receiving a request from one of said terminal devices when a user of said

one of said terminal devices desires for a media title (col. 2, lines 10-40); each of said

proxy servers comprising a cache memory for storing units of some of titles (col. 24,

lines 28-30 and lines 50-55); a central media server coupled to said proxy servers ()col.

2, lines 10-25, Tanaka discloses a central video server comprising a plurality of frame

block servers); and said central media server having a storage space for storing a

plurality of said titles and providing data from one of said titles when receiving a proxy

request from one of said proxy servers (col. 2, lines 8-16).

However, Tanaka does not disclose wherein the number of units of each of said

titles is determined by a request frequency to said each of said titles;

In an analogous art, Cherkasova discloses a method and system for caching

objects in an object transfer environment based on frequency of requests for the object

(col. 4, lines 45-55).

Therefore it would have been obvious to one in the ordinary skill in the art at the

time the invention was made to combine the video server of Tanaka with the caching

method of Cherkasova to have a method for systematically caching objects and

replacing cached objects such that popular media titles are stored in cache and

previous media titles are readily replaced. This would benefit users by providing a

better cache management of the system for providing popular, on-demand media titles.

71.   The limitations of claims 60-62 are covered by the rejections of claims 20-22.

Therefore claims 60-62 are rejected by the same references used for the rejections of

claims 20-22.

72.   Claims 23, 27, 63, 67, 68, and 77 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Tanaka and Dias et al (U.S. 6,317,778).

73.   Regarding claim 23, Tanaka teaches all of the features of claim 1. However,

Tanaka does not disclose further comprising detecting multiple ongoing requests from

clients for a title received at different times during caching in response to an initial

request of said title, and increasing the number of sub-blocks cached from the blocks of

at least one title in response to a subsequent request of said title.

In an analogous art, Dias teaches duplication of objects stored in the cache to

provide relatively high availability for more popular media titles (col. 4, lines 29-46).

Therefore it would have been obvious to one in the ordinary skill in the art at the

time the invention was made to combine the video server of Tanaka with the cache

duplication system of Dias to provide more than one copy of popular video titles in the

cache. This benefits the video server system by enabling a better system throughput

and reducing the number of cache misses and/or preventing poor system performance

in case of cache node failure (col. 4, lines 32-40).

74.   Regarding claim 27, Tanaka teaches all of the features of claim 24. However he

fails to teach wherein said caching action comprises removing data from a cached

portion of said title. In an analogous art, Dias teaches replacement of objects in cache

members (col. 4, lines 30-45).

75.   The limitations of claim 63 are covered in the rejection of claim 23. Therefore

claim 63 is rejected by the same references used in claim 23.

76.   The limitations of claim 67 are covered in the rejection of claim 27. Therefore

claim 67 is rejected by the same references used in claim 27.

77.   The limitations of claim 68 are covered by the rejections of claim 41. Therefore

claim 68 is rejected by the same references used for the rejections of claims 41.

78.   The limitations of claim 77 are covered by the rejections of claims 27 and 68.

Therefore claim 77 is rejected by the same references used for the rejections of claims

27 and 68.

Conclusion

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

U.S. 6,085,193 to Malkin et al.

U.S. 6,385,699 to Bozman et al.

U.S. 6,272,598 to Arlitt et al.

U.S. 2002/0049824 to WILSON, KENNETH MARK
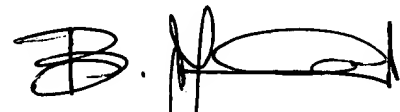
U.S. 6,377,972 to Guo et al.

U.S. 6,272,598 B1 to Arlitt et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry B Dennison whose telephone number is (703)305-8756. The examiner can normally be reached on M-F 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A Wiley can be reached on (703)308-5221. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

JBD

BUNJOB JAROENCHONWANIT
PRIMARY EXAMINER